SAN JUAN SPECIAL SERVICES DISTRICT NO. 1
MEXICAN HAT, UTAH
DRINKING WATER SOURCE PROTECTION PLAN

EXECUTIVE SUMMARY

The San Juan County Special Services District No. 1 (District) serves the conununity of Mexican Hat. Mexican Hat is located along the San Juan River in southeast Utah. The water system is comprised of two drinking water wells, a storage tank, and a gravity-fed distribution system.

The water quality is generally poor. Total dissolved solids are approximately 1,700 milligrams per liter (mg/l), exceeding the recommended level of 500 mg/l. Sulfates are measured at approximately 800 mg/l, which exceeds the 500-mg/l level for water facilities supplying commercial systems. The State of Utah has issued an administrative order requiring the District to bring the water system into compliance with safe drinking water rules.

The wells are developed in the San Juan River alluvium and formations of the early Permian and/or later Pennsylvanian ages near the trough of the north-trending Mexican Hat Syncline. The water-bearing formation is fractured and outcrops to the east and west of the well field. Due to the outcropping, fracturing, and lack of a confining layer, the aquifer is characterized as unprotected.

The grout seals of the wells are 30 feet in length, and the integrity of the seals is unknown. The drinking water well field is located within an active oil well field. There are oil wells, oil transmission lines, and lined storage pits within 100 feet of the drinking water wells. The oil well field is regulated by the Utah Department of Oil and Gas. The oil well field was inspected in May of 2001 and found in compliance. Based on compliance with regulatory rules and regulations, potential contamination from the oil field should be adequately controlled.

The drinking water wells are located in the San Juan River floodplain. The San Juan River is within 100 feet of the well field, and one of the District's wells was abandoned due to flooding.

Due to the shallow depth to water, the unknown integrity of the grout seal, the location of the wells near the river, and the lack of a proper sanitary seal, the well field is susceptible to potential contamination from the San Juan River.

The District is located within unincorporated San Juan County. The District cannot implement land use ordinances. The District will develop a short-term and long-term plan to address wellhead protection issues. The short-term plan will focus on protecting the existing wells from the San Juan River hazard. The long-term plan may include development of treatment capabilities and/or additional sources that will reduce the risk of contamination from the river and other potential contamination sources. The District has received approximately $1.3 million dollars to perform upgrades to the system, including construction of a new drinking water treatment plant.

A complete *Drinking Water Source Protection Plan* for the San Juan County Special Services District is available to the public upon request.

1.0 INTRODUCTION

The Safe Drinking Water Act (SDWA) amendments of 1986 required states to establish Wellhead Protection Programs (WHPP) to ensure a comprehensive approach to sustaining groundwater resources as present and future water supplies. The State of Utah has had a mandatory Drinking Water Source Protection Program for groundwater sources since 1993.

The 1996 reauthorization of the SDWA included many changes designed to improve the protection of drinking water supplies. Among these changes was a requirement that states establish Source Water Assessment and Protection (SWAP) Programs. The intent of this change is to incorporate management options to protect water supplies that go beyond treatment and development of new supplies. The Utah SWAP program, developed in 1998 and 1999, combined the existing groundwater program with additional information regarding assessment and protection of surface waters.

1.1 Drinking Water Source Protection Plans

A Drinking Water Source Protection Plan (DWSPP) is required for each well, spring, and tunnel used as a source by a public water system (PWS). DWSPPs are the primary means for a PWS to protect their sources of drinking water from contamination. They are intended to be working documents that will be used on a regular basis by the PWS. The DWSPP should be considered a "how-to" handbook for the water system to protect their sources of drinking water now and in the future. Changes in population, land use, sources, and the operation of the District may require updating the DWSPP in the future.

1.2 System Information

The District's drinking water system serves the unincorporated area of Mexican Hat, Utah, along the banks of the San Juan River in southern San Juan County. Mexican Hat consists of a small community based on recreation and providing services to the traveling public in the four comers region. The system is listed as a community water system in the *Groundwater Source Protection Database*. In 1995 the reported population of Mexican Hat was approximately 78 people (Wright Water Engineers, Inc. [WWE], December 1998). The water system provides service to 42 residential and 16 commercial connections. The system's identification number is 19008, and Mark Sword is the system's operator.

1.3 Source Information

There are four wells, of which only two are operating. All four wells are located along the San Juan River in Section 8, Township 42 South, Range 19 East of the Salt Lake Baseline and Meridian. (See Figure 1.)

The first well is named the Pitless Adapter and is located at Latitude Wells/Ex. 9 Wells/Ex. 9 (See Figure 2.) A search of the Utah Department of Water Resources' *Well Database* found no logs for this well. The estimated yield of the Pitless Adapter well is approximately 25 gallons per minute (gpm). The well is outside, without a well house or concrete apron. (See Photograph 1 in Appendix A.) The well is located approximately 100 feet Wells/Ex. 9 According to Clint Howell, the well driller, this well was drilled in 1989.

The second well is named the North Well and is located at Latitude Wells/Ex. 9 and Longitude Wells/Ex. 9 (See Figure 1.) This well is located within a well house approximately 100 feet from the San Juan River. (See Photograph 2.) The well is located within the San Juan River's floodplain. A search of the Utah Department of Water Resources' *Well Database* found no logs for this well. The estimated yield of the North Well is also 25 gpm. According to Clint Howell this well was drilled during the 1970s.

A third well was abandoned due to an improper seal in addition to flooding by the San Juan River.

A fourth well was drilled under the direction of Kleinfelder, Inc. for Sunrise Engineering. Quality Drilling, Inc. of Blanding, Utah drilled the well. This well is located approximately 500 feet north of the boat landing on the San Juan River. The well is approximately 400 feet west of the San Juan River. The legal description of the site is Wells/Ex. 9 Wells/Ex. 9 Figure 2.) Due to water quality problems, the well was never comected to the distribution system. (See Photograph 3.)

1.4 Water Quality

Water quality in well no. 4 is provided in Table 1. Water quality for the Mexican Hat drinking water system is marginal. The wells in the Mexican Hat well field produce water that is high in total dissolved solids (TDS) and Sulfates. TDS in the service area typically exceeds 1,700 mg/l. Generally water with more than 1,000 mg/l will produce objectionable problems with taste. The Utah Department of Enviromnental Quality's maximum contaminant level (MCL) for TDS is 2,000 mg/l, and the secondary (recommended) standard is 500 mg/l. Under rules promulgated by the Utah Department of Enviromiental Quality, if the TDS exceeds 1,000 mg/l, then it must be shown that no better source of water is available.

Another elevated compound in the water is sulfate. Water quality samples from well no. 4 show sulfate levels exceeding 800 mg/l. High sulfate concentrations in the drinking water may cause taste and odor problems and act as a mild laxative in a portion of the population that generally includes infants, transients, and new residents. The state's MCL for sulfate is 1,000 mg/l, with a secondary standard (recommended) of 250 mg/l. If sulfate exceeds 500 mg/l, then Utah law states that water from a community supply system cannot be provided to a commercial establishment for human consumption.

Another elevated water quality constituent consists of radiochemicals with gross alpha emitters. Gross alpha in well no. 4 samples was 26.3 pCi/l, which exceeds the drinking water MCL of 15 picocuries per liter (pCi/l). In addition, elevated levels of total uranium were found.

Given the close proximity to the river and the fractured nature of the aquifer, a micro particulate analysis was performed on well no. 4. The relative risk factor for the microscopic particulate analysis (MPA) was 0. It is important to note that well no. 4 was never placed into service. But given its relative location to the other wells and similar lithography, water quality and aquifer characteristics should be similar.